Figure 1

```
                    ┌──────────────┐
                    │    Start     │
                    └──────┬───────┘
                           │
                           ▼
                 ┌──────────────────┐
                 │ Obtain Multiple  │
                 │   Hierarchical   │
                 │      Layers      │
                 │                  │
                 │       100        │
                 └────────┬─────────┘
                          │
                          ▼
                 ┌──────────────────┐
                 │ Obtain Priorities│
                 │  for Each Layer  │
                 │                  │
                 │       110        │
                 └────────┬─────────┘
                          │
                          ▼
                 ┌──────────────────┐
                 │     Compare      │
                 │ Equivalent Nodes │
                 │  for Each Tree   │
                 │                  │
                 │       120        │
                 └────────┬─────────┘
                          │
                          ▼
                 ┌──────────────────┐
                 │ Select Equivalent│
                 │ Node With Highest│
                 │    Priority      │
                 │                  │
                 │       130        │
                 └────────┬─────────┘
                          │
                          ▼
                      ◇ Any More
                    Equivalent
                      Nodes?
                       140
```

Yes

No

Merge Tree Found

150

End

Figure 2

Tree 200

Reference Node

A~ → A

A → B
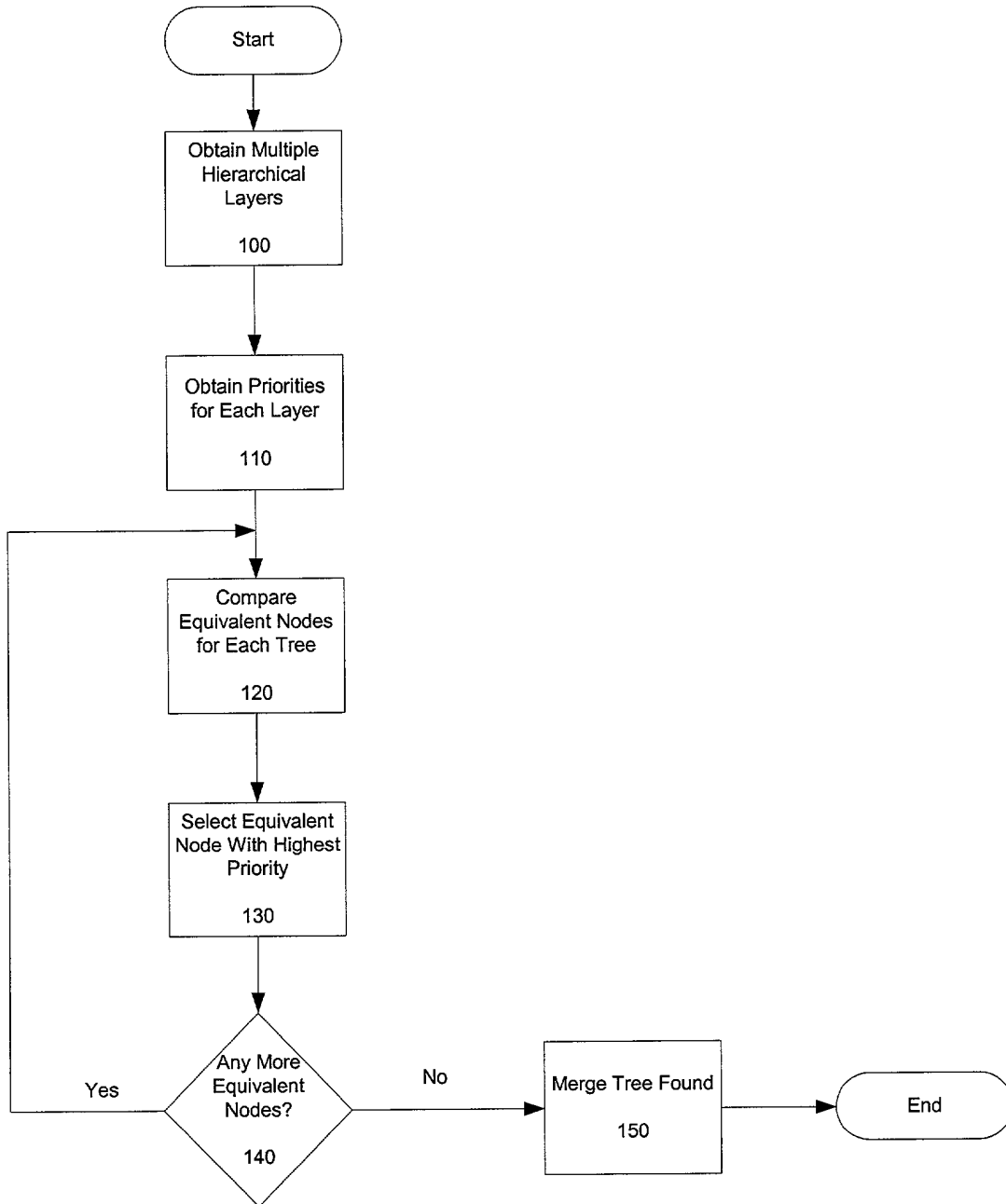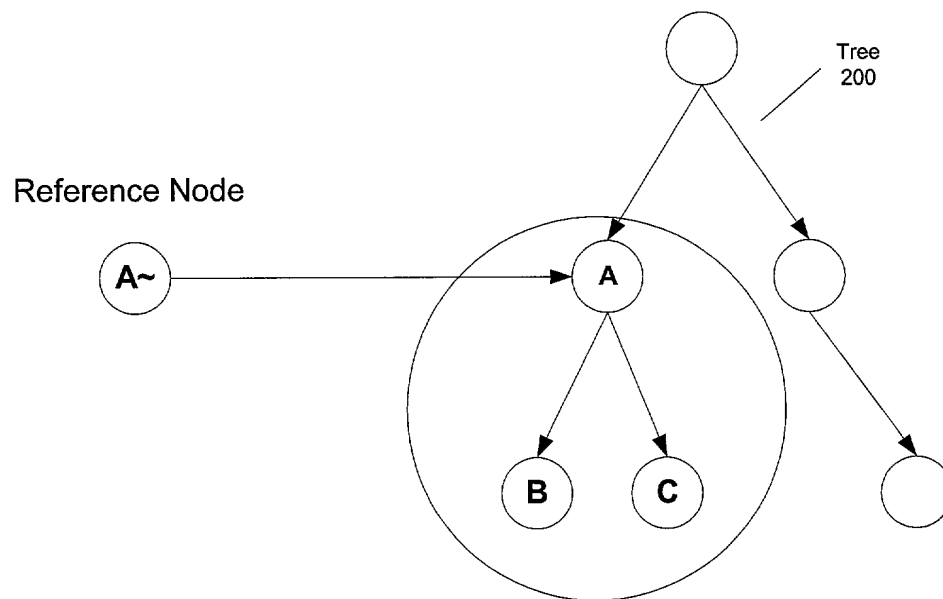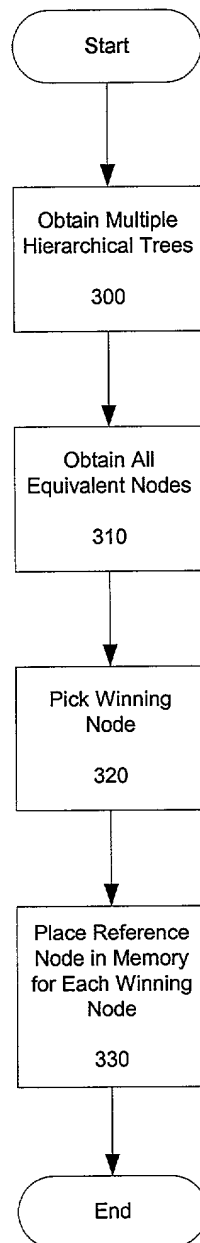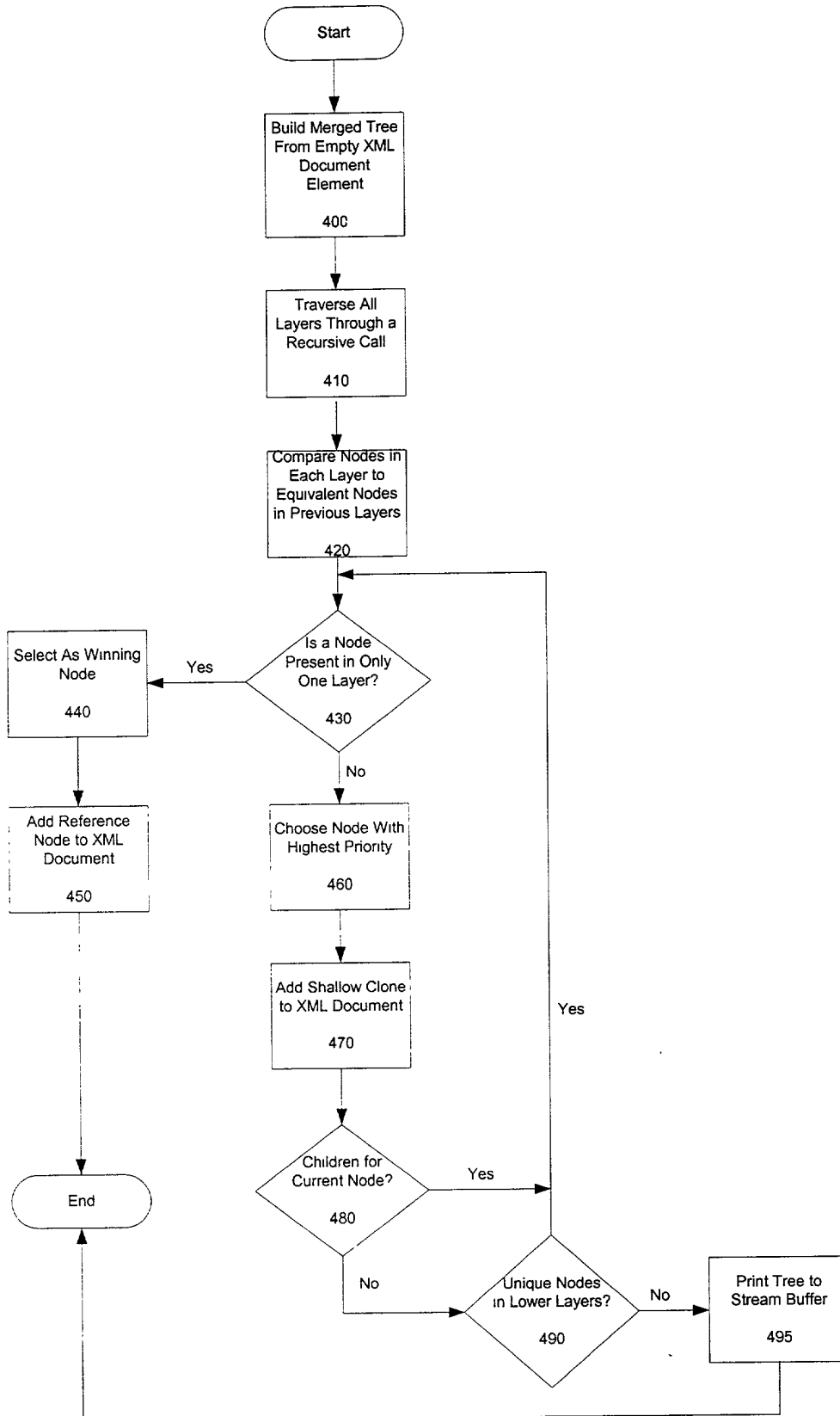A → C

1. Reference Node A~ Keeps a Reference to A
2. Any Children of A Are Also Included in the Contents of A~

Figure 3

Start

↓

Obtain Multiple
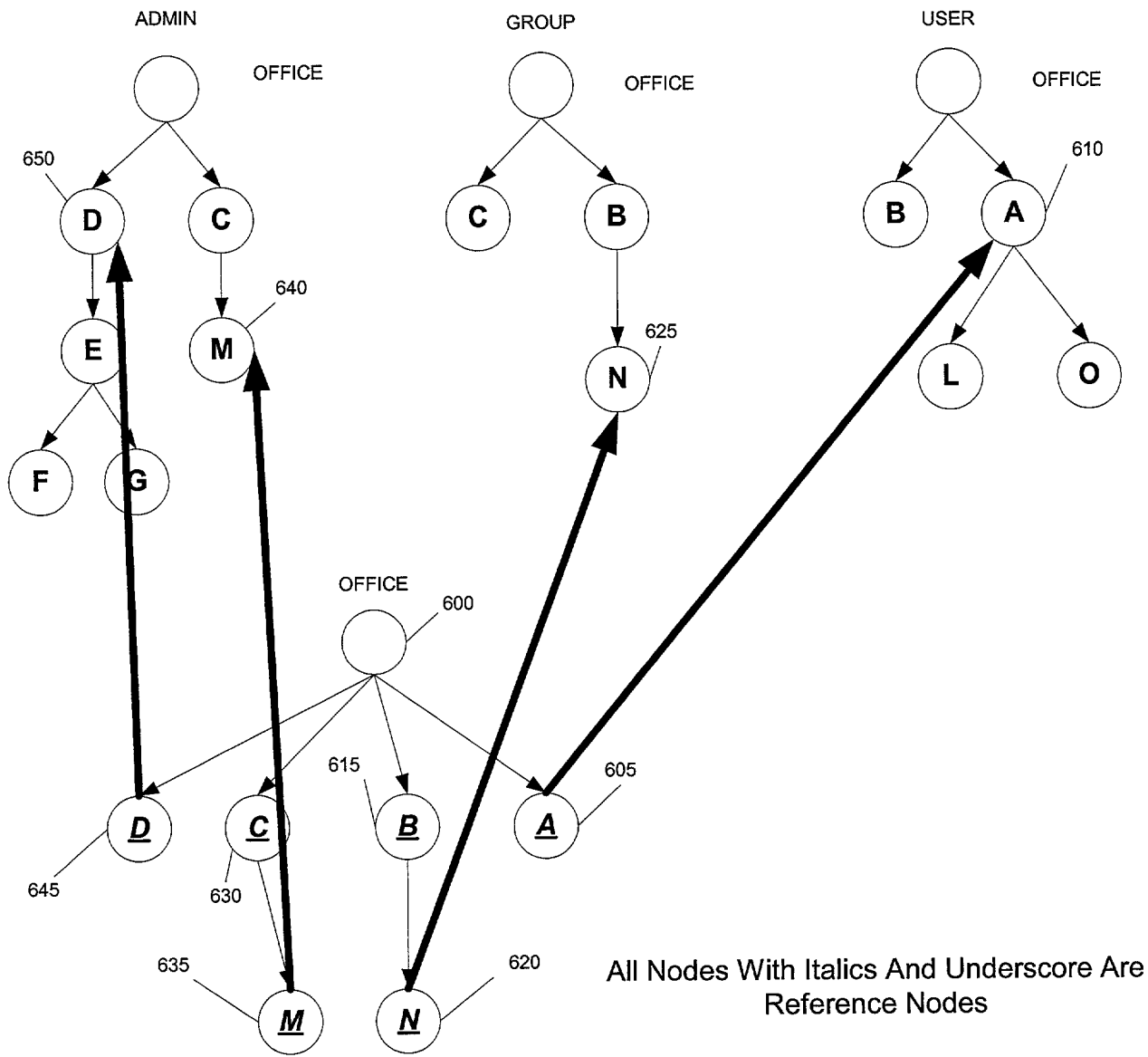Hierarchical Trees

300

↓

Obtain All
Equivalent Nodes

310

↓

Pick Winning
Node

320

↓

Place Reference
Node in Memory
for Each Winning
Node

330

↓

End

Figure 4

```
                          ┌─────────┐
                          │  Start  │
                          └─────────┘
                               │
                               ▼
                    ┌────────────────────┐
                    │  Build Merged Tree │
                    │  From Empty XML    │
                    │  Document          │
                    │  Element           │
                    │                    │
                    │        400         │
                    └────────────────────┘
                               │
                               ▼
                    ┌────────────────────┐
                    │  Traverse All      │
                    │  Layers Through a  │
                    │  Recursive Call    │
                    │                    │
                    │        410         │
                    └────────────────────┘
                               │
                               ▼
                    ┌────────────────────┐
                    │ Compare Nodes in   │
                    │ Each Layer to      │
                    │ Equivalent Nodes   │
                    │ in Previous Layers │
                    │        420         │
                    └────────────────────┘
                               │
                               ▼
   ┌──────────────┐         ◇◇◇◇◇◇◇◇
   │ Select As    │  Yes   ◇ Is a Node ◇
   │ Winning Node │◄──────◇ Present in    ◇
   │              │        ◇ Only One      ◇
   │     440      │         ◇ Layer?      ◇
   └──────────────┘          ◇   430     ◇
          │                     ◇◇◇◇◇
          ▼                       │ No
   ┌──────────────┐               ▼
   │ Add Reference│        ┌────────────────┐
   │ Node to XML  │        │ Choose Node With│
   │ Document     │        │ Highest Priority│
   │              │        │      460        │
   │     450      │        └────────────────┘
   └──────────────┘               │
          │                       ▼
          │                ┌────────────────┐
          │                │ Add Shallow    │
          │                │ Clone to XML   │
          │                │ Document       │
          │                │      470       │
          │                └────────────────┘
          │                       │
          │                       ▼
          │                     ◇◇◇◇◇◇
          │                  ◇ Children for ◇  Yes
          │                 ◇ Current Node? ◇────►
          │                  ◇     480     ◇
          │                     ◇◇◇◇◇
          ▼                       │ No
   ┌──────────┐                   ▼
   │   End    │                ◇◇◇◇◇◇
   └──────────┘             ◇ Unique Nodes ◇  No   ┌──────────────┐
                           ◇ in Lower Layers?◇────►│ Print Tree to│
                            ◇     490       ◇      │ Stream Buffer│
                               ◇◇◇◇◇               │     495      │
                                                   └──────────────┘
```

Figure 5

500
Memory

510
Group Tree

540 —— Office

C   B

N

530
Admin Tree

550 —— Office

D   C

E   M

F   G

520
User

560 —— Office

A   B

L   O

Figure 6

ADMIN

OFFICE

650

D   C

640

E   M

F   G

GROUP

OFFICE

C   B

625

N

USER

OFFICE

610

B   A

L   O

OFFICE

600

615   605

D   *C*   *B*   *A*

645   630

635   620

M   *N*

All Nodes With Italics And Underscore Are
Reference Nodes

Merged Tree

FIGURE 7